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ABSTRACT

The United States Training and Employment Service General Aptitude Test Battery (GATB), first published in 1947, has been included in a continuing program of research to validate the tests against success in many different occupations. The GATB consists of 12 tests which measure nine aptitudes: General Learning Ability; Verbal Aptitude; Numerical Aptitude; Spatial Aptitude; Form Perception; Clerical Perception; Motor Coordination; Finger Dexterity; and Manual Dexterity. The aptitude scores are standard scores with 100 as the average for the general working population, and a standard deviation of 20. Occupational norms are established in terms of minimum qualifying scores for each of the significant aptitude measures which, when combined, predict job performance. Cutting scores are set only for those aptitudes which aid in predicting the performance of the job duties of the experimental sample. The GATB norms described are appropriate only for jobs with content similar to that shown in the job description presented in this report. A description of the validation sample is also included. (AG)

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TECHNICAL REPORT

ON

STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

AUDIT CLERK 1-02.32

B-470 or S-199

TM 001 712

U. S. Employment Service in
Cooperation with
Michigan State Employment Service

September 1962

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STANDARDIZATION OF THE GENERAL APTITUDE TEST BATTERY

FOR

Audit Clerk 1-01.32

B-470 or S-199

Summary

The General Aptitude Test Battery, B-1002A, was administered to a final sample of 53 Audit and Review Clerks, 1-01.32, (Michigan State Civil Service Classification: Unemployment Claims Clerk A assigned to audit and review functions) employed in the branch offices of the Michigan Employment Security Commission during the period from November 1959 through September 1960. The criterion consisted of supervisory ratings on a descriptive rating scale. On the basis of mean scores, standard deviations, correlations with the criterion, job analysis data, and their combined selective efficiency, Aptitudes Q-Clerical Perception, K-Motor Coordination, and F-Finger Dexterity were selected for inclusion in the test norms.

GATB Norms for Audit Clerk 1-01.32

Table I shows, for B-1002, for minimum acceptable score for each aptitude included in the test norms for Audit Clerk 1-01.32

TABLE I

Minimum Acceptable Scores on B-1001 and B-1002 for
Audit Clerk 1-01.32

B-1001			B-1002		
Aptitude	Tests	Minimum Acceptable Aptitude Score	Aptitude	Tests	Minimum Acceptable Aptitude Score
Q	CB-1-B	105	Q	Part 1	105
T	CB-1-G CB-1-K	100	K	Part 8	100
F	CB-1-O CB-1-P	85	F	Part 11 Part 12	80

Effectiveness of Norms

The data in Table V indicate that 12 of the 17 poor workers, or 71 percent of them, did not achieve the minimum scores established as cutting scores on the recommended test norms. This shows that 71 percent of the poor workers would not have been used in the selection process. Moreover, 29 of the 34 workers who made qualifying test scores, or 85 percent, were good workers.

I. Purpose

This study was conducted to determine the best combination of aptitudes and minimum scores to be used as norms on the General Aptitude Test Battery for the occupation of Audit Clerk 1-01.32.

II. Sample

During the period November 1959 through September 1960, the General Aptitude Test Battery, B-1002A, was administered to a sample of 5 male and 56 female Audit and Review Clerks 1-01.32 employed in 16 branch offices of the Michigan Employment Security Commission. 14 of these offices are in the Detroit metropolitan area, and the remaining 2 are located in St. Joseph and Flint, Michigan. Of the 61 tested, 8 were eliminated due to insufficient experience, leaving a final sample of 53. Three months experience in the audit and review function was considered by management to be the training time required to become proficient in the work.

The audit and review clerks in the branch offices of the Michigan Employment Security Commission are selected by branch office supervision, usually the Benefit Claims Supervisor, from the Unemployment Claims Clerks A (Michigan State Civil Service classification) to perform this special function of the claims procedure. In the selection of clerks to perform the audit and review function no tests are administered and length of experience as an Unemployment Claims Clerk A is not specified. However, approximately 6 months of claims taking and claims paying is considered desirable in order to perform the audit and review function adequately. In addition, appropriate experience or a Bachelor's degree is required for entry into the class by the Michigan Civil Service Commission. For the purposes of this study only the length of experience on the audit and review function was considered.

Table II shows the means, standard deviations, ranges, and Pearson product-moment correlations with the criterion for age, education, and experience.

TABLE II

Means (M), Standard Deviations (σ), Ranges, and Pearson Product-Moment Correlations with the Criterion (r) for Age, Education, and Experience

Audit Clerk 1-01.32

N = 53

	M	σ	Range	r
Age (years)	40.1	9.8	23-59	-.461**
Education (years)	12.6	1.3	10-16	-.096
Experience (months)	24.4	22.7	3-108	.021

** Significant at the .01 level

There are no significant correlations with the criterion for education and experience. The significant negative correlation at the .01 level with age indicates that the younger clerks tended to perform better on the job or raters tended to give higher ratings to younger clerks.

III. Job Description

Job Title: Audit Clerk, 1-01.32

Job Summary: Checks or verifies figures, computations, and postings pertaining to the processing and paying of unemployment compensation to workers who are covered by State and Federal laws. Compares various forms and records for legibility, agreement, and accuracy of data submitted by other clerical workers. Takes appropriate action to clear discrepancies. Compiles totals and balances for individual items or amounts shown on reports. Performs related duties as assigned.

Work Performed: Follows prescribed procedures to verify figures, computations, and postings submitted by other clerical workers engaged in processing and paying unemployment compensation to workers covered by State and Federal laws. Examines machine-recorded list of individual check payments for printing errors such as overprinting or double postings. Compares claimant's name, social security number, employer account number, and amount of payment on check copy against same items on corresponding ledger card for legibility and accuracy of transcription. Verifies accuracy of payment entry, checking for exceptions such as overpayments, underpayments, and payments conflicting with back-to-work information or stop orders. Codes and compiles data from claimant ledger cards and claimant history cards for individual items and amounts shown on periodic reports. Verifies number of weekly payments remaining to be paid as indicated on each claimant ledger card. Accounts for all checks used and prepares daily report of same. Arranges required records and forms in batch for mailing to

administrative offices. Separates and distributes to proper location the remaining claims media. Sorts claimant ledger cards into groups of active, inactive, to be inactivated, and those to which a new employer will be assigned. Performs related duties as assigned.

IV. Experimental Battery

All of the tests of the General Aptitude Test Battery, B-1002A, were administered to the sample group.

V. Criterion

The criterion consisted of supervisory ratings on the Descriptive Rating Scale, SP-21, developed by the Bureau of Employment Security. The rating scale consists of 9 items with five alternatives for each item. Weights of one through five, indicating the degree of job proficiency, were assigned to each alternative, making possible a range of 9-45 in the ratings.

The Benefit Claims Supervisors in charge of the audit and review function in the branch offices prepared ratings and reratings for the clerks who were included as part of the sample. An interval of two weeks elapsed between the first and second ratings.

A correlation coefficient of .930 was obtained between the two sets of ratings. The final criterion consisted of the combined and averaged rating scale scores multiplied by ten to eliminate the decimal. The possible range of scores was 90-450. The actual range was 165-440, with a mean score of 347.736 and a standard deviation of 60.840.

VI. Statistical and Qualitative Analysis

A. Statistical Analysis:

Table III shows the means, standard deviations, and Pearson product-moment correlations with the criterion for the aptitudes of the GATB. The means and standard deviations of the aptitudes are comparable to general population norms with a mean of 100 and a standard deviation of 20.

TABLE III

Means (M), Standard Deviations (σ), and Pearson Product-Moment Correlations with the Criterion (r), for the Aptitudes of the GATB

AUDIT CLERK 1-01.32

N = 53

Aptitudes	M	σ	r
G-Intelligence	109.0	14.2	.386**
V-Verbal Aptitude	111.1	14.5	.305*
N-Numerical Aptitude	109.7	13.5	.504**
S-Spatial Aptitude	101.1	16.4	.262
P-Form Perception	99.8	20.8	.494**
Q-Clerical Perception	119.9	17.5	.422**
K-Motor Cocrdination	111.7	21.2	.434**
F-Finger Dexterity	101.3	20.7	.319*
M-Manual Dexterity	95.4	20.3	.293*

**Significant at the .01 level
*Significant at the .05 level

Aptitudes V, Q and K have the highest mean scores and aptitudes G, V and N have relatively low standard deviations.

For a sample of 53 cases, correlations of .351 and .271 are significant at the .01 level and the .05 level of confidence, respectively. Aptitudes G, N, P, Q and K correlate significantly with the criterion at the .01 level. Aptitudes V, F and M correlate significantly with the criterion at the .05 level.

B. Qualitative Analysis:

The job analysis indicated that the following aptitudes measured by the GATB appear to be important for this occupation.

Intelligence (G) - Necessary to understand written and oral instructions, learn procedures and apply them, and to perceive the relationship between the various forms used in this job.

Numerical Aptitude (N) - Necessary to be able to perform arithmetic computations rapidly and accurately.

Clerical Aptitude (Q) - Required to detect printing errors on checks, overpayments and underpayments, and to compare names, social security numbers, employer account numbers, payment entries, etc.

On the basis of the job analysis data, the following aptitudes are considered obviously unimportant for performing the duties of this job and are considered "irrelevant" aptitudes: V-Verbal, S-Spatial, P-Form Perception, and M-Manual Dexterity.

C. Selection of Test Norms

TABLE IV

Summary of Qualitative and Quantitative Data

Type of Evidence	Aptitudes								
	G	V	N	S	P	Q	K	F	M
Job Analysis Data Important	X		X			X			
Irrelevant		X		X	X				X
Relatively High Mean		X				X	X		
Relatively Low Sigma	X	X	X						
Significant Correlation with Criterion	X	X	X		X	X	X	X	X
Aptitudes to be considered for trial norms	G		N			Q	K	F	

Trial norms consisting of various combinations of Aptitudes G, N, Q, K, and F with appropriate cutting scores were evaluated against the criterion by means of the tetrachoric correlation technique. A comparison of the results showed that B-1002 norms consisting of Q-105, K-100, and F-80 had the best selective efficiency.

VII. Concurrent Validity of Norms

The validity of the norms was determined by computing a tetrachoric correlation coefficient between the test norms and the criterion and applying the Chi Square test. The criterion was dichotomized by placing as close as possible to one-third of the sample in the low criterion group. A criterion critical score of 340 was used and resulted in 17 of the 53 workers or 32 percent of the sample being placed in the low criterion group.

Table V shows the relationship between test norms consisting of Aptitudes Q, K, and F with critical scores of 105, 100 and 80, respectively, and the dichotomized criterion for Audit Clerk 1-01.32. Workers in the high criterion group have been designated as "good workers" and those in the low criterion group as "poor workers."

TABLE V

Validity of Test Norms for Audit Clerk 1-01.32
(Q-105, K-100, F-80)

N = 53

	Non-Qualifying Test Scores	Qualifying Test Scores	Total
Good Workers	7	29	36
Poor Workers	12	5	17
Total	19	34	53

$r_{tet} = .73$ $\quad \sigma r_{tet} = .23$ $\quad X^2 = 11.004$ $\quad P/? < .0005$

The data in the above table indicate a significant relationship between the test norms and the criterion for the sample.

VIII. Conclusions

On the basis of the results of this study, Aptitudes Q, K, and F with minimum scores of 105, 100, and 80, respectively, have been established as B-1002 norms for the occupation of Audit Clerk 1-01.32. The equivalent B-1001 norms consist of Q-105, T-100, and F-85.

IX. Determination of Occupational Aptitude Pattern

The specific norms established for this study did not meet the requirements for allocation to any of the existing 35 occupational aptitude patterns.(10/61). The data for this sample will be considered for future groupings of occupations in the development of new occupational aptitude patterns.